We Claim:

1. A blood processing system comprising an extracorporeal apparatus to receive the blood drawn from an individual and to conduct separation of the blood into plasma and at least one cellular blood component, and a device communicating with the extracorporeal apparatus to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators from either plasma, or the at least one cellular blood component, or both.

2. A blood processing system comprising an extracorporeal apparatus to receive the blood drawn from an individual and to conduct separation of the blood into plasma and at least one cellular blood component, and a device communicating with the extracorporeal apparatus to remove from either plasma, or the at least one cellular blood component, or both, cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of the separation of the blood.

3. A system according to claim 1 or 2 wherein the extracorporeal apparatus conducts the separation of the blood, at least in part, by filtration.

4. A system according to claim 1 or 2 wherein the extracorporeal apparatus conducts the separation of the blood, at least in part, by centrifugation.

5. A system according to claim 1 or 2 wherein the cellular blood component includes a red blood cell component.

6. A system according to claim 1 or 2 wherein the cellular blood component includes a platelet component.

7. A system according to claim 1 or 2 wherein the cellular blood component includes a

white blood cell component.

8. A system according to claim 1 or 2 wherein the extracorporeal apparatus returns at least one cellular blood component to the individual following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

9. A system according to claim 1 or 2 wherein the extracorporeal apparatus retains at least one cellular blood component following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

10. A system according to claim 1 or 2 wherein the extracorporeal apparatus returns plasma to the individual following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

11. A system according to claim 1 or 2 wherein the extracorporeal apparatus retains plasma following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

12. A system according to claim 1 or 2 wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

13. A system according to claim 12 wherein the adsorption medium is characterized by a Biocompatibility Index of not greater than 14.

14. A system according to claim 13 wherein the Biocompatibility Index is not greater than 7.

15. A system according to claim 1 or 2 wherein the device is in an upstream flow direction from the extracorporeal apparatus.

16. A system according to claim 1 or 2

wherein the device is in a downstream flow direction from the extracorporeal apparatus.

17. A system according to claim 1 or 2 wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators, the adsorption medium comprising a polymeric material.

18. A system according to claim 17 wherein the polymeric material comprises particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

19. A system according to claim 17 wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

20. A system according to claim 17 wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

21. A system according to claim 17 wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.

22. A blood processing system comprising an extracorporeal apparatus to oxygenate the blood drawn from an individual and return the oxygenated blood to the

individual, and a device communicating with the apparatus to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators from the oxygenated blood.

23. A blood processing system comprising an extracorporeal apparatus to oxygenate the blood drawn from an individual and return the oxygenated blood to the individual, and a device communicating with the apparatus to remove from the oxygenated blood cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of extracorporeal processing.

24. A system according to claim 22 or 23 wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

25. A system according to claim 24 wherein the adsorption medium is characterized by a Biocompatibility Index of not greater than 14.

26. A system according to claim 25 wherein the Biocompatibility Index is not greater than 7.

27. A system according to claim 22 or 23 wherein the device is in an upstream flow direction from the extracorporeal apparatus.

28. A system according to claim 22 or 23 wherein the device is in a downstream flow direction from the extracorporeal apparatus.

29. A system according to claim 22 or 23 wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators, the adsorption medium comprising a polymeric material.

30. A system according to claim 29 wherein the polymeric material comprises

particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

31. A system according to claim 29 wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

32. A system according to claim 29 wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

33. A system according to claim 29 wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.

34. A blood processing system comprising an extracorporeal apparatus to remove waste from the blood drawn from an individual and return waste-depleted blood to the individual, and a device communicating with the apparatus to remove from the waste-depleted blood cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of extracorporeal processing.

35. A system according to claim 34 wherein the apparatus removes waste by hemofiltration.

36. A system according to claim 34

wherein the apparatus removes waste by dialysis.

37. A system according to claim 34

wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

38. A system according to claim 37

wherein the adsorption medium is characterized by a Biocompatibility Index of not greater than 14.

39. A system according to claim 38

wherein the Biocompatibility Index is not greater than 7.

40. A system according to claim 34

wherein the device is in an upstream flow direction from the extracorporeal apparatus.

41. A system according to claim 34

wherein the device is in a downstream flow direction from the extracorporeal apparatus.

42. A system according to claim 34

wherein the device includes an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators, the adsorption medium comprising a polymeric material.

43. A system according to claim 42

wherein the polymeric material comprises particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

44. A system according to claim 42

wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

45. A system according to claim 42

wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

46. A system according to claim 42

wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.

47. A blood processing method comprising the steps of

conveying the blood drawn from an individual to an extracorporeal apparatus,

operating the extracorporeal apparatus to conduct separation of the blood into plasma and at least one cellular blood component, and

removing cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators from either plasma, or the at least one cellular blood component, or both.

48. A blood processing method comprising the steps of

conveying the blood drawn from an individual to an extracorporeal apparatus,

operating the extracorporeal apparatus to conduct separation of the blood into plasma and at least one cellular blood component, and

removing from either plasma, or the at least one cellular blood component, or both, cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of the separation of the blood.

49. A method according to claim 47 or 48 wherein the extracorporeal apparatus conducts the separation of the blood, at least in part, by filtration.

50. A method according to claim 47 or 48 wherein the extracorporeal apparatus conducts the separation of the blood, at least in part, by centrifugation.

51. A method according to claim 47 or 48 wherein the cellular blood component includes a red blood cell component.

52. A method according to claim 47 or 48 wherein the cellular blood component includes a platelet component.

53. A method according to claim 47 or 48 wherein the cellular blood component includes a white blood cell component.

54. A method according to claim 47 or 48 further including returning at least one cellular blood component to the individual following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

55. A method according to claim 47 or 48 further including retaining at least one cellular blood component following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

56. A method according to claim 47 or 48 further including returning plasma to the individual following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

57. A method according to claim 47 or 48 further including retaining plasma following removal of cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

58. A method according to claim 47 or 48 wherein the removing step includes use of an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

59. A method according to claim 58 wherein the adsorption medium comprises a polymeric material.

60. A method according to claim 59 wherein the polymeric material comprises particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

61. A method according to claim 59 wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

62. A method according to claim 59 wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

63. A method according to claim 59 wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.

64. A blood processing method comprising the steps of

conveying the blood drawn from an individual to an extracorporeal apparatus,

operating the extracorporeal apparatus to oxygenate the blood, and

removing cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators from the oxygenated blood.

65. A blood processing method comprising the steps of

conveying the blood drawn from an individual to an extracorporeal apparatus,

operating the extracorporeal apparatus to oxygenate the blood, and

removing from the oxygenated blood cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of extracorporeal processing.

66. A method according to claim 64 or 65

wherein the removing step includes use of an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

67. A method according to claim 66

wherein the adsorption medium comprises a polymeric material.

68. A method according to claim 67

wherein the polymeric material comprises particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

69. A method according to claim 67

wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins

having a surface modified to minimize activation of blood complement system.

70. A method according to claim 67 wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

71. A method according to claim 67 wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.

72. A blood processing method comprising

conveying the blood drawn from an individual to an extracorporeal apparatus,

operating the extracorporeal apparatus to remove waste from the blood and return waste-depleted blood to the individual, and

removing from the waste-depleted blood cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators that are generated as a result of extracorporeal processing.

73. A method according to claim 72 wherein the apparatus removes waste by hemofiltration.

74. A method according to claim 72 wherein the apparatus removes waste by dialysis.

75. A method according to claim 72 wherein the removing step includes use of an adsorption medium to remove cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

76. A method according to claim 75 wherein the adsorption medium comprises a polymeric material.

77. A method according to claim 76 wherein the polymeric material comprises particles prepared by polymerization or copolymerization of a monomer selected from a group consisting of styrene, ethylstyrene, α-methylstyrene, divinylbenzene, di isopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

78. A method according to claim 76 wherein the polymeric material comprises particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

79. A method according to claim 76 wherein the polymeric material comprises particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

80. A method according to claim 76 wherein the polymeric material comprises particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ-solvents.